Memo: To File MAY 1998
From: Mitch Kaplan and Kevin Mayer

MEETING ON PERCHLORATE CONTAMINATION AT KERR MCGEE/BMI COMPLEX

Representatives of EPA's RCRA and Superfund programs met with representatives of the Nevada Department of Environmental Protection, Kerr McGee and the Southern Nevada Water Authority on May 7, 1998 to discuss the current status of Kerr McGee's investigation of perchlorate contamination in ground water and in Las Vegas Wash. Future investigation activities as well as issues relating to the removal and treatment of perchlorate were also discussed.

ONGOING INVESTIGATIONS

Kerr McGee (KMCC) is currently installing a 6" diameter pump test well at the Pittman Lateral (Dog Pound Line). The pump test is tentatively scheduled to run within the next 2 weeks.

Additional exploratory drilling has revealed a 5' thick clay layer within the main paleochannel in the vicinity of the Pittman Lateral. This could have an effect on ground water movement within the alluvium in this area. The lateral extent of this clay layer is not yet known. The pump test could indicate its presence based on the response curves derived from the drawdowns of the monitoring wells used during the test. Currently at least 3 monitoring wells will be used during the pump test.

Major ground water sampling is scheduled to take place next week (5/11-15) by KMCC. Perchlorate concentrations, depth to ground water, conductivity and ground water gradients are to be determined. A decision will be made whether purging of monitoring wells prior to perchlorate sampling is required. If not, this would greatly reduce the volume of purge water that would need to be disposed of. KMCC will run test comparisons of purged and unpurged wells to see if there are differences in perchlorate concentrations. A water sample was collected by NDEP from well PC-18 on 5/5. Results are due back soon.

KMCC now believes that the primary paleochannel runs below the Henderson Waste Water Treatment Plant (WWTP). There are now additional questions on the nature of flow of ground water and perchlorate from the "dog pound line" to the

WWTP. Testing of ground water from the paleochannel is not showing a correlation between the highest perchlorate concentrations and the thickest portions of the paleochannel. KMCC has conducted tests looking for stratification of perchlorate in terms of concentration in ground water due to density. No correlation has been found so far.

Perchlorate concentrations have not been found to be uniform across the paleochannel at the "dog pound line". The paleochannel is now estimated to be approximately 600 feet across at a 30 foot thickness. Following completion of the pump test at the "dog pound line" and acquisition of the aquifer data, KMCC should be ready to go ahead with final additional well construction and initiation of ground water extraction and perchlorate treatment. At this time the KMCC has not decided upon the type of perchlorate treatment to be used.

Kerr McGee agreed to provide all geographic and water quality data to the GIS database managed by the Southern Nevada Water Authority.

RAPID INFILTRATION BASINS (RIBs)

These ponds could potentially be releasing between 1 to 1.5 million gallons per day (mgd) to the ground water and Las Vegas Wash. The total flow in Las Vegas Wash in this area has been estimated to be 100 mgd. Recent investigations have indicated that a paleochannel may exist below the basins and may be in hydraulic communication with the basins. Perchlorate could be being diluted due to the infiltration of waste water from the ponds (which they are designed to do) to the ground water. The RIBs add approximately 1 mgd of treated waste water to the shallow ground water. Perchlorate concentrations in ground water from wells located at the "dog pound line" have been measured in the 500 ppm range while perchlorate concentrations in the wash have been measured in the 50 ppb (part per billion) range.

ISSUES:

EXISTING CHROMIUM EXTRACTION SYSTEM- The following must occur before reinjection of ground water can be eliminated.

An 11 acre evaporation pond must be built

-- Contract for construction has been let

-- NPDES permit must be modified

-- Construction permit from NDEP needed (NDEP might be able to expedite these)

-- Runoff study required by Clark County

Based on the schedule for completion of these tasks, the evaporation pond would not be

completed before August or September of 1998.

PITTMAN LATERAL (DOG POUND LINE) EXTRACTION SYSTEM- This system should not be constructed and begin operation until the pump test is completed and the data analyzed.

This data will permit KMCC to install additional wells and design the pumping system to maximize the amount of ground water that can removed from the paleochannel within the physical limitations and hydraulics of the channel. The treatment method for ground water extracted from this location has not yet been specified by KMCC.

LAS VEGAS WASH EXTRACTION SYSTEM-

Extraction of ground water at this location could involve pumping of significant amounts of additional waste water infiltrating from the rapid infiltration basins. The infiltration has potentially altered the ground water gradients in this area causing a flattening of the gradients. Additional ground water data needs to be obtained in the area near Las Vegas Wash before an extraction system can be installed and operated. An additional pump test could be conducted which would allow for the acquisition of ground water flow data. The point of ground water extraction would need to maximize the amount of perchlorate-contaminated ground water removed while minimizing the amount of Las Vegas Wash and RIB water that would also be removed. Kerr McGee must determine the feasibility and optimal location, if any, for this system.

KERR MCGEE REPORT-

A decision whether the report of additional investigation Kerr McGee is due to issue should include the "dog pound line" pump test data and new ground water

quality data needs to be made. The consensus at the meeting was that the delay in waiting for the additional data would be no more than 2 to 3 weeks. The time needed to drill the additional wells near the wash was estimated at between 2 and 4 days.

There was a discussion concerning the saturated thickness of sediments underlying Las Vegas Wash. Perchlorate may have been present in the ground water system for the past 40+ years and may have built up in the sediments underlying the Wash. Once the various remediation measures for removal and treatment of perchlorate have been implemented and operated for a period of years, it may become apparent that perchlorate concentrations in Las Vegas Wash and in Lake Mead are not being reduced or not at the rates that would be predicted. If this occurs, it could be the result of release of perchlorate stored in the sediments underlying Las Vegas Wash. This perchlorate is probably being continuously released into the Wash but is being masked by the higher concentrations of perchlorate currently flowing into the Wash with the ground water from KMCC. There appears to be no option for addressing this perchlorate in storage. We do not know for certain that this senario is occurring or to what extent it is occurring.